

SandRidge Energy

North Park Basin

T7N-R80W-S16

Ray Ranch 0780 6-16H

Wellbore #1

Plan: Design #1

Standard Survey Report

08 July, 2016

SandRidge Energy

Survey Report

Company:	SandRidge Energy	Local Co-ordinate Reference:	Well Ray Ranch 0780 6-16H
Project:	North Park Basin	TVD Reference:	KB @ 8152.0usft
Site:	T7N-R80W-S16	MD Reference:	KB @ 8152.0usft
Well:	Ray Ranch 0780 6-16H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Design #1	Database:	EDMProd

Project	North Park Basin		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		T7N-R80W-S16			
Site Position:		Northing:	1,453,179.12 usft	Latitude:	40° 34' 26.505 N
From:	Map	Easting:	2,754,928.85 usft	Longitude:	106° 22' 55.973 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.57 °

Well	Ray Ranch 0780 6-16H					
Well Position	+N/-S	0.0 usft	Northing:	1,453,269.12 usft	Latitude:	40° 34' 27.395 N
	+E/-W	0.0 usft	Easting:	2,754,928.85 usft	Longitude:	106° 22' 55.985 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	8,136.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/31/2009	9.88	66.97	53,186

Design	Design #1				
Audit Notes:					
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	1.23	

Survey Tool Program	Date	7/8/2016			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	12,392.6	Design #1 (Wellbore #1)	Sperry MWD	Fixed:v2:standard declination	

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00	

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Design #1	Database:	EDMProd

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 2.00									
4,300.0	2.00	175.50	4,300.0	-1.7	0.1	-1.7	2.00	2.00	0.00
4,400.0	4.00	175.50	4,399.8	-7.0	0.5	-6.9	2.00	2.00	0.00
4,500.0	6.00	175.50	4,499.5	-15.6	1.2	-15.6	2.00	2.00	0.00
4,600.0	8.00	175.50	4,598.7	-27.8	2.2	-27.7	2.00	2.00	0.00
4,700.0	10.00	175.50	4,697.5	-43.4	3.4	-43.3	2.00	2.00	0.00
4,800.0	12.00	175.50	4,795.6	-62.4	4.9	-62.3	2.00	2.00	0.00
4,900.0	14.00	175.50	4,893.1	-84.8	6.7	-84.7	2.00	2.00	0.00
5,000.0	16.00	175.50	4,989.6	-110.6	8.7	-110.4	2.00	2.00	0.00
5,042.8	16.86	175.50	5,030.7	-122.7	9.6	-122.5	2.00	2.00	0.00
Start 2343.0 hold at 5042.8 MD									

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5,100.0	16.86	175.50	5,085.4	-139.2	10.9	-139.0	0.00	0.00	0.00
5,200.0	16.86	175.50	5,181.1	-168.1	13.2	-167.8	0.00	0.00	0.00
5,300.0	16.86	175.50	5,276.8	-197.1	15.5	-196.7	0.00	0.00	0.00
5,400.0	16.86	175.50	5,372.5	-226.0	17.8	-225.5	0.00	0.00	0.00
5,500.0	16.86	175.50	5,468.3	-254.9	20.0	-254.4	0.00	0.00	0.00
5,600.0	16.86	175.50	5,564.0	-283.8	22.3	-283.2	0.00	0.00	0.00
5,700.0	16.86	175.50	5,659.7	-312.7	24.6	-312.1	0.00	0.00	0.00
5,800.0	16.86	175.50	5,755.4	-341.6	26.9	-340.9	0.00	0.00	0.00
5,900.0	16.86	175.50	5,851.1	-370.5	29.1	-369.8	0.00	0.00	0.00
6,000.0	16.86	175.50	5,946.8	-399.4	31.4	-398.6	0.00	0.00	0.00
6,100.0	16.86	175.50	6,042.5	-428.3	33.7	-427.5	0.00	0.00	0.00
6,200.0	16.86	175.50	6,138.2	-457.2	35.9	-456.3	0.00	0.00	0.00
6,300.0	16.86	175.50	6,233.9	-486.1	38.2	-485.2	0.00	0.00	0.00
6,400.0	16.86	175.50	6,329.6	-515.0	40.5	-514.1	0.00	0.00	0.00
6,500.0	16.86	175.50	6,425.3	-543.9	42.8	-542.9	0.00	0.00	0.00
6,600.0	16.86	175.50	6,521.0	-572.9	45.0	-571.8	0.00	0.00	0.00
6,700.0	16.86	175.50	6,616.7	-601.8	47.3	-600.6	0.00	0.00	0.00
6,800.0	16.86	175.50	6,712.4	-630.7	49.6	-629.5	0.00	0.00	0.00
6,900.0	16.86	175.50	6,808.1	-659.6	51.9	-658.3	0.00	0.00	0.00
7,000.0	16.86	175.50	6,903.8	-688.5	54.1	-687.2	0.00	0.00	0.00
7,100.0	16.86	175.50	6,999.5	-717.4	56.4	-716.0	0.00	0.00	0.00
7,200.0	16.86	175.50	7,095.2	-746.3	58.7	-744.9	0.00	0.00	0.00
7,300.0	16.86	175.50	7,190.9	-775.2	61.0	-773.7	0.00	0.00	0.00
7,385.8	16.86	175.50	7,273.0	-800.0	62.9	-798.5	0.00	0.00	0.00
Start DLS 8.00 TFO -176.00									
7,400.0	15.72	175.21	7,286.7	-804.0	63.2	-802.4	8.00	-7.98	-2.06
7,450.0	11.74	173.74	7,335.2	-815.8	64.3	-814.2	8.00	-7.97	-2.93
7,500.0	7.77	170.80	7,384.5	-824.2	65.4	-822.6	8.00	-7.94	-5.88
7,550.0	3.86	161.87	7,434.2	-829.1	66.5	-827.5	8.00	-7.82	-17.86
7,600.0	1.20	73.84	7,484.2	-830.6	67.5	-828.9	8.00	-5.31	-176.08
7,650.0	4.47	14.31	7,534.1	-828.5	68.5	-826.9	8.00	6.54	-119.05
7,700.0	8.40	7.20	7,583.8	-823.0	69.5	-821.3	8.00	7.85	-14.22
7,750.0	12.37	4.62	7,633.0	-814.0	70.3	-812.4	8.00	7.95	-5.16
7,800.0	16.36	3.28	7,681.4	-801.7	71.2	-800.0	8.00	7.97	-2.68
7,850.0	20.35	2.46	7,728.8	-785.9	72.0	-784.2	8.00	7.98	-1.65
7,900.0	24.35	1.89	7,775.1	-767.0	72.7	-765.2	8.00	7.99	-1.13
7,950.0	28.34	1.48	7,819.9	-744.8	73.3	-743.0	8.00	7.99	-0.83
7,994.1	31.87	1.20	7,858.0	-722.7	73.8	-720.9	8.00	7.99	-0.64
Niobrara									
8,000.0	32.34	1.16	7,863.0	-719.5	73.9	-717.8	8.00	7.99	-0.57
8,050.0	36.34	0.91	7,904.3	-691.3	74.4	-689.6	8.00	7.99	-0.51
8,100.0	40.33	0.70	7,943.5	-660.3	74.8	-658.6	8.00	8.00	-0.42
8,150.0	44.33	0.52	7,980.5	-626.7	75.2	-624.9	8.00	8.00	-0.36
8,200.0	48.33	0.36	8,015.0	-590.5	75.5	-588.8	8.00	8.00	-0.31

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Well:	Ray Ranch 0780 6-16H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Design #1	Database:	EDMProd

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,250.0	52.33	0.23	8,046.9	-552.0	75.7	-550.3	8.00	8.00	-0.27
8,300.0	56.33	0.10	8,076.0	-511.4	75.8	-509.7	8.00	8.00	-0.25
8,345.9	60.00	0.00	8,100.2	-472.4	75.8	-470.7	8.00	8.00	-0.22
Start 150.0 hold at 8345.9 MD									
8,400.0	60.00	0.00	8,127.3	-425.6	75.8	-423.9	0.00	0.00	0.00
8,495.9	60.00	0.00	8,175.2	-342.5	75.8	-340.8	0.00	0.00	0.00
Start DLS 10.00 TFO 0.00									
8,500.0	60.41	0.00	8,177.3	-339.0	75.8	-337.3	10.00	10.00	0.00
8,550.0	65.41	0.00	8,200.0	-294.5	75.8	-292.8	10.00	10.00	0.00
8,600.0	70.41	0.00	8,218.8	-248.2	75.8	-246.5	10.00	10.00	0.00
8,650.0	75.41	0.00	8,233.5	-200.4	75.8	-198.7	10.00	10.00	0.00
8,700.0	80.41	0.00	8,244.0	-151.5	75.8	-149.8	10.00	10.00	0.00
8,750.0	85.41	0.00	8,250.2	-101.9	75.8	-100.3	10.00	10.00	0.00
8,795.9	90.00	0.00	8,252.0	-56.0	75.8	-54.4	10.00	10.00	0.00
Start 3596.7 hold at 8795.9 MD									
8,800.0	90.00	0.00	8,252.0	-52.0	75.8	-50.3	0.00	0.00	0.00
8,900.0	90.00	0.00	8,252.0	48.0	75.8	49.7	0.00	0.00	0.00
9,000.0	90.00	0.00	8,252.0	148.0	75.8	149.6	0.00	0.00	0.00
9,100.0	90.00	0.00	8,252.0	248.0	75.8	249.6	0.00	0.00	0.00
9,200.0	90.00	0.00	8,252.0	348.0	75.8	349.6	0.00	0.00	0.00
9,300.0	90.00	0.00	8,252.0	448.0	75.8	449.6	0.00	0.00	0.00
9,400.0	90.00	0.00	8,252.0	548.0	75.8	549.5	0.00	0.00	0.00
9,500.0	90.00	0.00	8,252.0	648.0	75.8	649.5	0.00	0.00	0.00
9,600.0	90.00	0.00	8,252.0	748.0	75.8	749.5	0.00	0.00	0.00
9,700.0	90.00	0.00	8,252.0	848.0	75.8	849.5	0.00	0.00	0.00
9,800.0	90.00	0.00	8,252.0	948.0	75.8	949.5	0.00	0.00	0.00
9,900.0	90.00	0.00	8,252.0	1,048.0	75.8	1,049.4	0.00	0.00	0.00
10,000.0	90.00	0.00	8,252.0	1,148.0	75.8	1,149.4	0.00	0.00	0.00
10,100.0	90.00	0.00	8,252.0	1,248.0	75.8	1,249.4	0.00	0.00	0.00
10,200.0	90.00	0.00	8,252.0	1,348.0	75.8	1,349.4	0.00	0.00	0.00
10,300.0	90.00	0.00	8,252.0	1,448.0	75.8	1,449.3	0.00	0.00	0.00
10,400.0	90.00	0.00	8,252.0	1,548.0	75.8	1,549.3	0.00	0.00	0.00
10,500.0	90.00	0.00	8,252.0	1,648.0	75.8	1,649.3	0.00	0.00	0.00
10,600.0	90.00	0.00	8,252.0	1,748.0	75.8	1,749.3	0.00	0.00	0.00
10,700.0	90.00	0.00	8,252.0	1,848.0	75.8	1,849.2	0.00	0.00	0.00
10,800.0	90.00	0.00	8,252.0	1,948.0	75.8	1,949.2	0.00	0.00	0.00
10,900.0	90.00	0.00	8,252.0	2,048.0	75.8	2,049.2	0.00	0.00	0.00
11,000.0	90.00	0.00	8,252.0	2,148.0	75.8	2,149.2	0.00	0.00	0.00
11,100.0	90.00	0.00	8,252.0	2,248.0	75.8	2,249.2	0.00	0.00	0.00
11,200.0	90.00	0.00	8,252.0	2,348.0	75.8	2,349.1	0.00	0.00	0.00
11,300.0	90.00	0.00	8,252.0	2,448.0	75.8	2,449.1	0.00	0.00	0.00
11,400.0	90.00	0.00	8,252.0	2,548.0	75.8	2,549.1	0.00	0.00	0.00
11,500.0	90.00	0.00	8,252.0	2,648.0	75.8	2,649.1	0.00	0.00	0.00
11,600.0	90.00	0.00	8,252.0	2,748.0	75.8	2,749.0	0.00	0.00	0.00

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Survey Report

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Project:	North Park Basin	TVD Reference:	KB @ 8152.0usft
Site:	T7N-R80W-S16	MD Reference:	KB @ 8152.0usft
Well:	Ray Ranch 0780 6-16H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Design #1	Database:	EDMProd

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,700.0	90.00	0.00	8,252.0	2,848.0	75.8	2,849.0	0.00	0.00	0.00
11,800.0	90.00	0.00	8,252.0	2,948.0	75.8	2,949.0	0.00	0.00	0.00
11,900.0	90.00	0.00	8,252.0	3,048.0	75.8	3,049.0	0.00	0.00	0.00
12,000.0	90.00	0.00	8,252.0	3,148.0	75.8	3,149.0	0.00	0.00	0.00
12,100.0	90.00	0.00	8,252.0	3,248.0	75.8	3,248.9	0.00	0.00	0.00
12,200.0	90.00	0.00	8,252.0	3,348.0	75.8	3,348.9	0.00	0.00	0.00
12,300.0	90.00	0.00	8,252.0	3,448.0	75.8	3,448.9	0.00	0.00	0.00
12,392.6	90.00	0.00	8,252.0	3,540.6	75.8	3,541.4	0.00	0.00	0.00
TD at 12392.6									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Ray Ranch 6-16H - plan hits target center - Point	0.00	0.00	8,252.0	3,540.6	75.8	1,456,809.73	2,755,004.69	40° 35' 2.387 N	106° 22' 55.458 W

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,994.1	7,858.0	Niobrara		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4200	4200	0	0	Start Build 2.00
5043	5031	-123	10	Start 2343.0 hold at 5042.8 MD
7386	7273	-800	63	Start DLS 8.00 TFO -176.00
8346	8100	-472	76	Start 150.0 hold at 8345.9 MD
8496	8175	-343	76	Start DLS 10.00 TFO 0.00
8796	8252	-56	76	Start 3596.7 hold at 8795.9 MD
12,393	8252	3541	76	TD at 12392.6

Checked By: _____ Approved By: _____ Date: _____

